

REMARKS

With the cancellation of claim 1, Claims 2-4 are pending. Claims 2-3 have been amended. The amendments to claim 2 are at least supported by the disclosure at page 16, line 24 to page 17, line 1. The amendments to claim 3 are at least supported by the disclosure at page 24, lines 4-6 and Table 1. No new matter has been introduced.

Information Disclosure Statement filed March 1, 2007

Applicants note that the marked-up copy of the March 1, 2007 Information Disclosure Statement, attached to the June 26, 2009 Office Action, does not contain any reference information. After communicating with the Technical Support Group at the United States Patent and Trademark Office and the Examiner's Supervisor, Duane Smith, Applicants submit, together with this Response to Office Action, a Re-submission of Information Disclosure Statement filed March 1, 2007.

Claim Rejections -- 35 U.S.C. 103

Applicants respectfully traverse the obviousness rejections of claims 1-4 over JP 2003-512147 A (Assignee: Hollingsworth & Vose Air Filtration Ltd.; "Hollingsworth") in view of JP 2002-348480 A (Assignee: Toyobo Co., Ltd.; "Toyobo"). The cancellation of claim 1 renders its rejection moot.

Claim 2, as amended, recites a friction-charged filter material comprising at least 20 mass% of polyester fiber wherein a phosphinic acid compound and/or sulfonic acid compound is copolymerized with a polyester molecular chain, and at least 30 mass% of polyolefin fibers. The claimed friction-charged filter material is self-extinguishing and exhibits high levels of electrostatic charges and high efficiency of particle collection (page 3, lines 6-10).

Hollingsworth discloses an electrostatically charged filter material comprising polyester fibers and electrostatically chargeable fibers of at least one other kind (abstract; column 1, lines 44-47). As the Office Action acknowledges, Hollingsworth fails to disclose a filter material comprising polyester fibers containing a phosphinic acid compound and/or sulfonic acid compound, as required by current claim 2. In other words, the polyester fibers in the filter material of Hollingsworth are general polyester

fibers, not the specific type of polyester fibers wherein a phosphinic acid compound and/or sulfonic acid compound is copolymerized with a polyester molecular chain, as recited in claim 2. The effects of the composition of the polyester fibers on the efficiency of particle collection of the filter material are shown in Table 1 and the examples of the present specification. Filter materials comprising polyester fibers in which a phosphinic acid compound is copolymerized with a polyester molecular chain exhibited a higher efficiency of particle collection than a filter material comprising general polyester fibers (compare Examples 1-3 with Comparative Example 2).

Toyobo discloses a polyester containing a copolymerized phosphorous compound (paragraphs [0005]-[0007]). The polyester of Toyobo is electretized to provide electric charges by methods such as corona discharge, electron irradiation, and electric charge under high electric field ([0013]).

As discussed above, Hollingsworth discloses an electrostatically charged filter material comprising general polyester fibers and fibers that can be charged with electric charges. Because the polyester fibers of Toyobo can be charged with electric charges, an ordinary skilled in the art would modify the filter material of Hollingsworth by replacing the fibers that can be charged with electric charges with the polyester fibers of Toyobo. As such, the modified filter material would comprise general polyesters, as disclosed by Hollingsworth, and polyester fibers containing a copolymerized phosphorous compound, as disclosed by Toyobo. This would be different from the claimed filter material comprising polyolefin fibers and polyester fibers that contains a phosphinic acid compound (and/or sulfonic acid compound). Hollingsworth and Toyobo do not teach or suggest replacing the general polyester fibers of Hollingsworth with the polyester fibers of Toyobo.

Hollingsworth and Toyobo fail to teach or suggest a friction-charged filter material comprising polyester fibers copolymerized with a phosphinic acid compound and polyolefin fibers, let alone the specific amounts of the copolyester fibers containing a phosphinic acid compound and the polyolefin fibers, as recited in present claim 2. The importance of the specific amount of the two types of fibers in the claimed filter material is shown in Table 1 of the present specification (compare Example 1 and Comparative Example 4).

In summary, Hollingsworth and Toyobo do not teach or suggest the claimed friction-charged filter material. Applicants contend that claims 2-4 would not have been obvious over Hollingsworth in view of Toyobo. Withdrawal of the rejections is respectfully requested.

CONCLUSION

The Examiner is encouraged to contact the undersigned regarding any questions concerning this amendment. In the event that the filing of this paper is deemed not timely, applicants petition for an appropriate extension of time. The Commissioner is authorized to debit Deposit Account No. 11-0600 the petition fee and any other fees that may be required in relation to this paper.

Respectfully submitted,
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